UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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UNDERGROUND INJECTION CONTROL PROGRAM

FINAL PERMIT

Class II Enhanced Oil Recovery Well
UIC Permit No. WY20940-04674

Well Name: Tribal C-14
Field Name: Steamboat Butte
County & State: Fremont County, Wyoming

issued to:

Marathon Oil Company
1501 Stampede Avenue
Cody, Wyoming 82414-4721

Date Prepared: March 2003

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PART I. AUTHORIZATION TO CONVERT AND OPERATE

Pursuant to the Underground Injection Control Regulations of the U. S. Environmental Protection Agency codified at Title 40 of the Code of Federal Regulations, Parts 124, 144, 146, and 147,

Marathon Oil Company
1501 Stampede Avenue
Cody, Wyoming 82414-4721

is hereby authorized to convert a commingled (Phosphoria/Tensleep) oil producer, to a commingled Phosphoria/Tensleep Class II enhanced oil recovery well, known as the:

Tribal C-14
NE/4 of the NE/4 of the SE/4
Section 30, Township 4 North, Range 1 West
Fremont County, Wyoming

Injection shall be for the purpose of enhancing oil recovery from the commingled Phosphoria and Tensleep Formations so that Marathon Oil Company (Marathon) may continue to support an ongoing oil recovery project in the Steamboat Butte Field, in accordance with conditions set forth herein.

Injection activities shall not commence until the operator has fulfilled all applicable conditions of this Permit and has received written authorization from the Director. "Prior to Commencing Injection" requirements are set forth in Part II. Section C. 1. of this Permit.

All conditions set forth herein refer to Title 40 §§124, 144, 146, and 147 of the Code of Federal Regulations and are regulations that are in effect on the date that this Permit becomes effective.

This Permit consists of a total of 31 pages and includes all items listed in the Table of Contents. Further, it is based upon representations made by the permittee and on other information contained in the administrative record.

This Permit will be issued for the operating life of the well and will be reviewed by the EPA at least every five (5) years to determine whether action under 40 CFR §144.36 (a) is warranted. The Permit will expire upon delegation of primary enforcement responsibility for the UIC Program to the State of Wyoming and/or the Shoshone and Arapaho Tribes, unless that State or Tribes has both authority, and chooses, to adopt and enforce this Permit as a State or Tribal Permit.

Issued this day of April 7, 2003.

This Permit shall become effective APR 7 2003.

Stephen S. Tuber Carol L. Campbell for
* Acting Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

* NOTE: The person holding this title is referred to as the "Director" throughout this Permit.

PART II. SPECIFIC PERMIT CONDITIONS

A. WELL CONSTRUCTION/CONVERSION REQUIREMENTS

1. **Casing and Cementing.** The as built construction and conversion details submitted with the application are hereby incorporated into this Permit as **Appendix A**, and shall be binding on the permittee. The cement used in the construction and conversion of the well was designed for the life expectancy of the well.

2. **Tubing and Packer Specifications.** Tubing and packer shall be designed to prevent injected fluids from contacting the outermost casing string protecting USDWs. The tubing information, as submitted by the permittee, is graphically incorporated into the Permit as **Appendix A.** The packer shall be set no more than 100 feet above the top injection perforations (6730') of the Phosphoria Formation.

3. **Monitoring Devices.** The operator shall provide and maintain in good operating condition:

   (a) a tap on the injection line between the pump house and the storage tank(s) and the injection well, for collection of a representative sample of injection fluids;

   (b) two (2) one-half (½) inch Female Iron Pipe (FIP) fittings with cut-off valves, one at the wellhead on the tubing, and a similar fitting and cut-off valve for the casing/tubing annulus (for attachment of pressure gauges). The operator shall always have in his possession calibrated gauges for the use of their field personnel to monitor these pressures.

   (c) a flow meter with a cumulative volume recorder that is certified for 95 percent accuracy or more throughout the range of injection rates allowed by the permit.

4. **Proposed Changes and Workovers.** The permittee shall give advance notice to the Director, as soon as possible, of any planned physical alterations or additions to the permitted facility. Major alterations

or workovers of the permitted well shall meet all conditions as set forth in this Permit. A major alteration/workover shall be considered any work performed which affects casing, packer(s), or tubing. In addition, the operator shall provide all records of well workovers, logging, or other test data to EPA within sixty (60) days of completion of the activity.

Appendix B contains samples of the appropriate reporting forms.

Demonstration of Part I (Internal) mechanical integrity shall be performed within thirty (30) days of completion of workovers/alterations and prior to resuming injection activities, in accordance with Part II. Section C.(2)(a).

5. **Formation Logging and Well Testing.**

   (a) Following the conversion of Tribal C-14, the permittee will determine the disposal zone pore pressure, (**static bottom-hole pressure**).

   (b) A **casing/tubing annulus pressure test**, with pressure chart, must be successfully performed and may be witnessed by a representative of the EPA prior to commencement of injection. The Tribal C-14 well must pass the test, thereby demonstrating the absence of leaks in the casing, tubing, and packer. **Written authorization to inject will be given subsequent to the well completion and successful mechanical integrity demonstration**.

   (c) **Permittee shall run a Water Injection Profile Log, including a RATS,** as soon as stabilized injection pressure has been established. This test will be used to assure no out of zone injection fluid migration is occurring. May also be a tool for monitoring the waterflood injection zone efficiency for secondary recovery.

6. **Postponement of Conversion**. If the well is not converted to injection status within one (1) year from the effective date of this permit, the authorization to convert and operate will automatically expire, unless the permittee requests and is granted an extension. The request shall be made to the Director in writing,

and shall state the reasons for the delay in conversion/construction, and confirm the protection of all USDWs. The extension under this section may not exceed one (1) year. Once authorization to convert and inject expires under this part, the full permitting process, including opportunity for public comment, must be repeated before authorization to construct/convert and operate will be reissued.

B. CORRECTIVE ACTION

Within a 1/4-mile area of review (AOR) surrounding the **Tribal C-14 well**, there are nine (9) wells: four (4) Tensleep producers (cemented a minimum 4110' above the top perforations), four (4) Phosphoria/Tensleep commingled producers (cemented to 1950') and one (1) Phosphoria/Tensleep commingled injector (UIC Permitted WY2865-02138). All of these wells are constructed in a manner to preclude uphole contamination from oil production. If any leaks are detected, the Tribal C-14 well will be shut-in and corrective measures will be taken to restore integrity to the wellbore. The permittee shall provide a written report of the corrections taken and receive written authorization from the Director prior to resuming injection activities. Therefore, the permittee is not required to perform any corrective action prior to the issuance of this Permit.

C. WELL OPERATION

1. **Prior to Commencing Injection.** Injection operations may not commence until the permittee has complied with the following:

   (a) Conversion is complete, and the permittee has submitted a Well Rework Record (Form 7520-12) as found in **Appendix B. A current wellbore diagram will be included**; and

   (b) the permittee has determined the injection zone(s) fluid pore pressure (**static bottom-hole pressure**); and

   (c) the permittee completes the requirements for Formation Logging and Well Testing (Part II, Section A. 5. above) and demonstrates that the well (**Tribal C-14**) **has mechanical integrity** in accordance with 40 CFR §146.8 and current UIC Guidance No. 37 and No. 39.; and

(d) **written authorization to inject** will be given from the Director, subsequent to the EPA review and approval of the above.

2. **Mechanical Integrity Demonstration.** The permittee is required to ensure each well maintains **(MIT)** at all times. The Director, by written notice, may require the permittee to comply with a schedule describing when mechanical integrity demonstrations shall be made.

(a) Notification. The Permittee shall notify the Director at least two (2) weeks prior to any required integrity test. The Director may allow a shorter notification period if it would be sufficient to enable the EPA to witness the mechanical integrity test. Notification may be in the form of a yearly or quarterly schedule of planned mechanical integrity tests (MIT), or it may be on an individual basis.

(b) Test Methods and Criteria. Test methods and criteria are to follow **current UIC Guidance for Conducting a Pressure Test to determine if a Well has leaks in the Tubing, Casing or Packer.**

(c) Routine Demonstrations of Mechanical Integrity. The operator shall demonstrate both Part I (Internal) and Part II (External) mechanical integrity (MI) prior to commencing injection and at least once every five (5) years during the life of the facility and shall demontrate Part I (Internal) MI **after workovers** (see Part II. A. 5.). Results of the test shall be submitted (on EPA form found in **Appendix B**) to the Director as soon as possible but no later than sixty (60) days after the test is complete.

(d) Loss of Mechanical Integrity. If the well fails to demonstrate mechanical integrity during a test, or a loss of mechanical integrity as defined by 40 CFR § 146.8 becomes evident during operation, the permittee shall notify the Director in accordance with Part III, Section E. 10. (c) of this Permit. Furthermore, injection activities shall be terminated immediately; and operations shall not be resumed until the permittee has taken necessary actions to restore integrity to the well and the Director gives approval to recommence injection.

3. **Injection Interval.** Injection will be limited to the Phosphoria and Tensleep Formations within the subsurface interval from 6721 feet to 7167 feet total depth (TD).

4. **Injection Pressure Limitation**. Maximum injection pressure (**Pmax**), measured at the surface, shall not exceed an amount that the Director determines is appropriate to ensure that injection does not initiate new fractures or propagate existing fractures in the confining zone overlying the injection zones. Enclosed with the permit application is a copy of EPA's "Acceptable Sand-Face Fracture Gradients" for the Steamboat Butte Field, dated August 12, 1997. The data provided by Chevron U.S.A. Production Company, (previous owner of the field) was from Step-Rate tests and ISIP information for three producing zones in the Steamboat Butte Field. Given these conditions, the permittee has requested a **maximum surface injection of 1,794 pounds per square inch gauge (psig).** If a higher maximum surface injection pressure (Pmax) is requested it must be accompanied by a step-rate test (SRT) of the injection zone(s).

A Maximum injection pressure of 1,794 psig is approved for this well until such time as the Director determines otherwise.

5. **Injection Volume Limitation.** There will be no limitation on the number of barrels of water per day (BWPD) that shall be injected into the Tribal C-14 well, provided further that in no case shall injection pressure exceed that limit shown in Part II. Section C. 4. (b) of this Permit.

6. **Injection Fluid Limitation.** Injection fluids are limited to those which are brought to the surface in connection with natural gas storage operations, or conventional oil and gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection. Fluids shall be further limited to those generated by sources owned or operated by the permittee.

7. **Annular Fluid.** The annulus between the tubing and the casing shall be filled with fresh water treated with a corrosion inhibitor, and a diesel freeze blanket may be circulated from surface to below frost level at completion to prevent freezing and possible equipment failure during winter months or other fluid as approved, in writing, by the Director.

D. MONITORING, RECORDKEEPING, AND REPORTING OF RESULTS

1. **Injection Well Monitoring Program.** Samples and measurements shall be representative of the monitored activity. The permittee shall utilize the applicable analytical methods described in Table 1 of 40 CFR §136.3, or in Appendix III of 40 CFR Part 261, or in certain circumstances, by other methods that have been approved by the Director. Monitoring shall consist of:

   (a) Analysis of the injection fluids, performed:

      (i) annually for Total Dissolved Solids, pH, Specific Conductivity, and Specific Gravity, from the common facility; however, if injection is maintained from more than one well from each common facility, then only one annual analysis is required for that facility; and

      (ii) whenever there is a change in the source of injection fluids a comprehensive water analysis shall be submitted to the Director within thirty (30) days of any change in injection fluids.

   (b) Monthly observations of flow rate, injection pressure, annulus pressure, and cumulative volume. One value for each of the above (whether or not fluids are being injected) shall be recorded at regular intervals no greater than thirty (30) days, and shall be representative of values obtained during operating conditions.

      If any leaks are detected, the well will be shut-in and corrective measures will be taken to restore integrity to the wellbore.

2. **Monitoring Information.** Records of any monitoring activity required under this permit shall include:

(a) The date, exact place, the time of sampling or field measurements;

(b) The name of the individual(s) who performed the sampling or measurements;

(c) The exact sampling method(s) used to take samples;

(d) The date(s) laboratory analyses were performed;

(e) The name of the individual(s) who performed the analyses;

(f) The analytical techniques or methods used by laboratory personnel; and

(g) The results of such analyses.

3. **Recordkeeping.**

(a) The permittee shall retain records concerning:

(i) the nature and composition of all injected fluids until three (3) years after the completion of plugging and abandonment which has been carried out in accordance with the Plugging and Abandonment Plan shown in **Appendix C**, and is consistent with 40 CFR §146.10.

(ii) all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation and copies of all reports required by this permit for a period of at least five (5) years from the date of the sample, measurement or report throughout the operating life of the well.

(b) The permittee shall continue to retain such records after the retention period specified in paragraphs (a) (i) and (a) (ii) unless he delivers the records to the Director or obtains written approval from the Director to discard the records.

(c) The operator shall maintain copies (or the originals) of all pertinent records at the office of:

4. **Reporting of Results.** The permittee shall submit an Annual Report, whether injecting or not, to the Director summarizing the results of the monitoring required by Part II, Section D. 1. (a), and (b) of this Permit.

   The first Annual Report shall cover the period from the effective date of the Permit through December 31. Subsequently, the Annual Report shall cover the period from January 1, through December 31. Annual Reports shall be submitted by **February 15** of the following year following data collection. **Appendix B** contains Form 7520-11 which may be copied and used to submit the annual summary of monitoring.

E. PLUGGING AND ABANDONMENT

1. **Notice of Plugging and Abandonment.** The operator shall notify the Director forty-five (45) days before conversion, or abandonment of the well.

2. **Plugging and Abandonment Plan.** The operator shall plug and abandon the well as provided in the Plugging and Abandonment Plan, **Appendix C. All plugs shall be "tagged" to verify plug placement.** This plan incorporates information supplied by the permittee, and additional requirements specified by the EPA.

   The Director reserves the right to change the manner in which the well will be plugged, if the well is modified during its permitted life, or if the well is not made consistent with EPA requirements for construction and mechanical integrity. The Director may ask the operator to update the estimated plugging cost periodically. Such estimates shall be based upon costs which a third party would incur to plug the well according to the plan.

3. **Inactive Wells.** After a two (2) year period of injection inactivity, 40 CFR § 144.52 (a) (6), the operator shall plug and abandon the well in accordance with Paragraph 2 above, unless the operator;

(a) Provides notice to the Director, including a demonstration that the well will be used in the future; and,

(b) Describes actions or procedures that the operator will take to ensure that the well will not endanger USDWs during the period of inactivity. These actions and procedures shall include continuing Financial Responsibility and mechanical integrity demonstrations and maintaining compliance with permit requirements designed for the protection of USDWs; and,

(c) Receives written notice by the Director, temporarily waiving plugging and abandonment requirements.

4. **Plugging and Abandonment Report.** Within sixty (60) days after plugging the well, the permittee shall submit a report on Form 7520-13 (**Appendix B**) to the Director. The report shall be certified as accurate by the person who performed the plugging operation and the report shall consist of either:

(1) a statement that the well was plugged in accordance with the plan; or

(2) where actual plugging differed from the plan, a statement that specifies the different procedures followed.

F. FINANCIAL RESPONSIBILITY

1. **Demonstration of Financial Responsibility.** The permittee is required to maintain continuous financial responsibility and resources to close, plug, and abandon the injection well as provided in the plugging and abandonment plan.

(a) The permittee shall submit financial statements and other information annually, or as required by EPA, in order to demonstrate that its financial position remains sound, and that it continues to have adequate financial resources, as determined by the EPA, to close, plug, and abandon the injection well in accordance with the approved plugging and abandonment plan.

(b) The permittee may, upon his own initiative and upon written request to the Director, change the type of financial mechanism or instrument utilized. A change in demonstration of financial responsibility must be approved by the Director. A minor permit modification will be made to reflect any change in financial mechanisms, without opportunity for public comment.

2. **Insolvency of Financial Institution.** In the event that an alternate demonstration of financial responsibility has been approved under (b), above, the permittee must submit an alternate demonstration of financial responsibility acceptable to the Director within sixty (60) days after either of the following events occur:

   (a) The institution issuing the trust or financial instrument files for bankruptcy; or

   (b) The authority of the trustee institution to act as trustee, or the authority of the institution issuing the financial instrument, is suspended or revoked.

3. **Cancellation of Demonstration by Financial Institution.** If the institution issuing the trust or financial instrument serves, to the Director, a 120-day notice of their intent to cancel the trust or financial instrument, the permittee must submit an alternative demonstration of financial responsibility, acceptable to the Director, within sixty (60) days of such notice.

PART III. GENERAL PERMIT CONDITIONS

A. EFFECT OF PERMIT

The permittee is allowed to engage in underground injection in accordance with the conditions of this permit. The permittee, as authorized by this permit, shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR, Part 142 or otherwise adversely affect the health of persons. Any underground injection activity not authorized in this permit, or otherwise authorized by Permit or rule, is prohibited. Issuance of this Permit does not convey property rights of any sort or any

exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Compliance with the terms of this Permit does not constitute a defense to any enforcement action brought under the provisions of Section 1431 of the Safe Drinking Water Act (SDWA) or any other law governing protection of public health or the environment for any imminent and substantial endangerment to human health, or the environment, nor does it serve as a shield to the permittee's independent obligation to comply with all UIC regulations.

B. PERMIT ACTIONS

1. **Modifications, Reissuance, or Termination.** The Director may, for cause or upon a request from the permittee, modify, revoke and reissue, or terminate this permit in accordance with 40 CFR §§ 124.5, 144.12, 144.39, and 144.40. Also, the permit is subject to minor modifications for cause as specified in 40 CFR § 144.41. The filing of a request for a permit modification, revocation and reissuance, or termination or the notification of planned changes or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition.

2. **Conversions (Non-Class II).** The Director may, for cause or upon a request from the permittee, allow conversion of the well from a Class II injection well to a non-Class II well. Requests to convert the injection well from its Class II status to a non-Class II well, such as, a production well, must be made in writing to the Director. Conversion may not proceed until a permit modification indicating the conditions of the proposed conversion is received by the permittee. Conditions of the modification may include such items as, demonstration of mechanical integrity, and well specific monitoring and reporting following the conversion.

3. **Transfers.** This Permit is not transferrable to any person except after notice is provided to the Director and the requirements of 40 CFR §144.38 are complied with. The Director may require modification, or revocation and reissuance, of the permit to change the name of the operator and incorporate such other requirements as may be necessary under the SDWA.

4. Operator Change of Address. Upon the operator's change of address, notice must be given to the appropriate EPA office.

C. SEVERABILITY

The provisions of this Permit are severable, and if any provision of this Permit or the application of any provision of this Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Permit shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 CFR Part 2 and 40 CFR §144.5, any information submitted to EPA pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 CFR Part 2 (Public Information). Claims of confidentiality for the following information will be denied:

- The name and address of the permittee, and
- Information which deals with the existence, absence or level of contaminants in drinking water.

E. GENERAL DUTIES AND REQUIREMENTS

1. Duty to Comply. The permittee shall comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any Permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, Permit termination, revocation and reissuance, or modification. Such noncompliance may also be grounds for enforcement action under the Resource Conservation and Recovery Act (RCRA).

2. Penalties for Violations of Permit Conditions. Any person who violates a Permit requirement is subject to civil penalties, fines, and other enforcement action under the SDWA and may be subject to such actions

pursuant to the RCRA. Any person who willfully violates Permit conditions may be subject to criminal prosecution.

3. **Need to Halt or Reduce Activity not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit.

4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

5. **Proper Operation and Maintenance.** The permittee shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.

6. **Duty to Provide Information.** The permittee shall furnish the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with the Permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this Permit.

7. **Inspection and Entry.** The operator shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

   (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Permit;

   (b) Have access to and copy, at reasonable times, any

records that must be kept under the conditions of this Permit;

(c) Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and

(d) Sample or monitor, at reasonable times, for the purpose of assuring Permit compliance or as otherwise authorized by the SDWA any substances or parameters at any location.

8. **Records of Permit Application.** The permittee shall maintain records of all data required to complete the Permit application and any supplemental information submitted for a period of five (5) days from the effective date of this Permit. This period may be extended by request of the Director at any time.

9. **Signatory Requirements.** All reports or other information requested by the Director shall be signed and certified according to 40 CFR §144.32.

10. **Reporting of Noncompliance.**

(a) Anticipated Noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with Permit requirements.

(b) Compliance Schedules. Reports of compliance or noncompliance with or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted no later than thirty (30) days following each schedule date.

(c) Written notice of any noncompliance which may endanger health or the environment **shall be provided to the Director within five (5) days** of the time the operator becomes aware of the noncompliance. The written notice shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times; if the noncompliance has not been corrected the anticipated time it is expected to continue; and steps taken or planned to prevent or

reduce recurrence of the noncompliance.

11. **Twenty-four Hour Noncompliance Reporting**. The operator shall report to the Director any noncompliance which may endanger health or the environment. Information shall be provided, either orally or by leaving a message, within twenty-four (24) hours from the time the operator becomes aware of the circumstances by telephoning 1.800.227.8917 and asking for the EPA Region VIII UIC Program Compliance and Enforcement Director, or by contacting the EPA Region VIII Emergency Operations Center at 303.293.1788 if calling from outside EPA Region VIII. The following information shall be included in the verbal report:

    (i) Any monitoring or other information which indicates that any contaminant may cause endangerment to a USDW.

    (ii) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.

12. **Oil Spill and Chemical Release Reporting**. The operator shall comply with all other reporting requirements related to oil spills and chemical releases or other potential impacts to human health or the environment by contacting the National Response Center (NRC) at 1.800.424.8802 or 202.267.2675, or through the NRC website at http://www.nrc.uscg.mil/index.htm.

13. **Other Noncompliance**. The operator shall report all other instances of noncompliance not otherwise reported at the time monitoring reports are submitted. The reports shall contain the information listed in Part III, Section E.10.c. ii. of this Permit.

14. **Other Information**. Where the operator becomes aware that he failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application, or in any report to the Director, the operator shall submit such correct facts or information within two (2) weeks of the time such information became known to him.

APPENDIX A

(Construction/Conversion Plans)

Tribal C-14

(Proposed Wellbore Diagram)

General Well Information:
API Code: 49-013-06469
Reservoir: Phosphoria/Tensleep
Field: Steamboat Butte
Field Code: 3231 OP - 16838
Permit No.:
Spud: June 6, 1951
Finished Drilling: October 8, 1951
Completion: October 25, 1951
First Prod/Inj: November 1, 1951
Abandon:

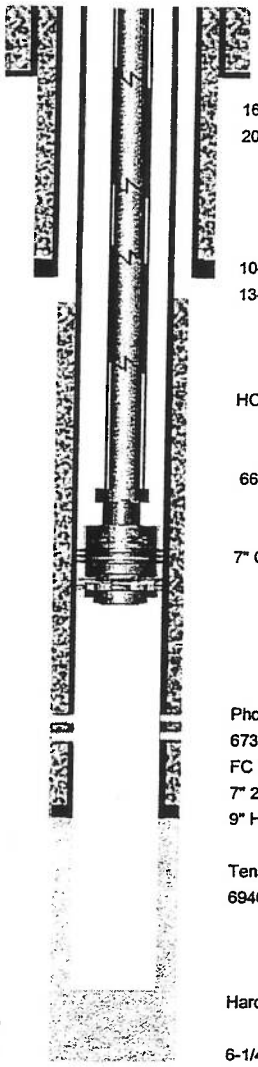
Well Location:
330' FNL, 230' FEL, Sec 30, T4N, R1W

Elevations:
KB: 5769'
Grd: 5757'
KB-Grd: 12'

Last MIT: Needed Upon Conversion
Max Inj P:
Max Inj Q:

Formation Tops:

3110'	Frontier
3736'	Mowry
4268'	Muddy
	Thermop.
4490'	Dakota
4744'	Lakota
4778'	Morrison
4920'	Sundance
5250'	Gyp Springs
5400'	Nugget
6627'	Dinwoody
6721'	Phosphoria
6930'	Tensleep
	PBTD 7007'
	TD 7167'



16" 54# @ 81' w/ 60 sax (TOC - Surface)
20" hole

10-3/4" 40.5# J-55 @ 737' w/ 400 sx (TOC - Surface)
13-3/4" hole

HOWCO DV Tool @ 3804' (Second Stage Cmt 500 sax)

6671' (223 jts) of 3-1/2" J-55 HDPE Poly-Core Tubing

7" Guiberson Uni-6 Nickel-Coated Injection Packer @ 6675'

Phosphoria Perforations:
6730-45' (4 SPF 11/97)
FC @ 6862' (First Stage Cmt 700 sax)
7" 23# N-80 @ 6946' w/ 1200 sx (TOC - 2444' Calculated)
9" Hole

Tensleep Perforations:
6946-7007' (Open Hole 10/51)

Hard Fill Encountered at 7007'

6-1/4" Open Hole From 6946' to 7137'

Well History:

10/51 - Spudded and Drilled to 7167' KB. Completed the Tensleep Formation open hole from 6946' - 7036', POP with 2-1/4" tubing pump. IP'd at 546 BOPD.
02/55 - Set Open Hole Baker Model "C" CIBP w/ Baker bailer and 3/4 sack cement at 6998' KB to shut off water.
07/66 - Well Testing at 76 BOPD adn 614 BWPD.
02/73 - ESP burnt, could not pull due to tight spot in casing. Cut off tubing @ 6581' and recovered. Swaged out collapsed casing from 6670-75'. Fished ESP equipment and POP.
03/97 - Reactivated Tensleep, SI since 1991. Ran ESP equipment and POP. Tested at 108 BO & 4538 BW.
11/97 - Recompleted to the Phosphoria. Set RBP at 6858', perforated the Phosphoria at 6730-45'. Broke down Phos perfs with a acid/nitrogen surge job, well swabbed dry. Performed gelled acid frac and well flowed back for three days. POP w/ the Tensleep isolated below the RBP. IP'd at 241 BO and 1015 BW.
11/98 - Retrieved RBP, sand frac'd the Upper Tensleep open hole from 6946-67'. Frac'd with 23,500# of 20-40 Ottawa sand and ProTechnics tagged frac for tracing. Frac height grew from 6946-6975', contained in the Upper Tensleep.
12/98 - Pumped 1470 bbls of cross-linked polymer (5000 ppm) into Tensleep open hole (OH packer set at 6975'). SD job early because well pressured up. IP'd at 350 BO and 3800 BW from Phos and Upper/Lower Tensleep.
02/99 - ESP failure. Tagged sand at 7007', could not clean out with tubing pump. POP.

Well Name & Number:	Tribal C-14	Lease:	Steamboat Butte		
County or Parish:	Fremont	State/Prov.	Wyoming	Country:	USA
Current Status:	Active Phos/Ten Producer	Field:	Steamboat Butte		
Prepared By:	G. Hilton	Last Revision Date:	02/20/2002		

EXHIBIT '10B'

APPENDIX B

(Reporting Forms)

EPA Form 7520- 7:	Application to Transfer Permit
EPA Form 7520-10:	Well Completion Report
EPA Form 7520-11:	Annual Well Monitoring Report
EPA Form 7520-12:	Well Rework Record
EPA Form 7520-13:	Plugging Record
EPA Form R8	Mechanical Integrity Pressure Test

Approved OMB No. 2000-0042. Approval expires 9-30-9

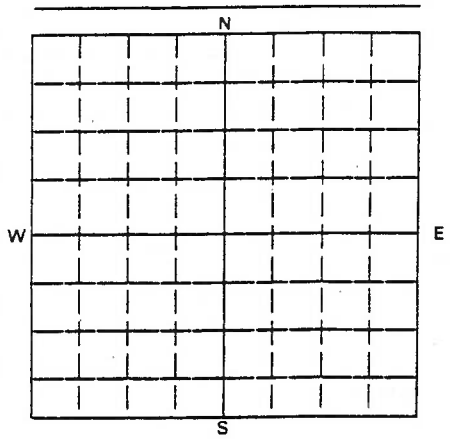
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

APPLICATION TO TRANSFER PERMIT

NAME AND ADDRESS OF EXISTING PERMITTEE	NAME AND ADDRESS OF SURFACE OWNER

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

¼ OF ¼ OF ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location _____ ft. from (N/S) _____ Line of quarter section

and _____ ft. from (E/W) _____ Line of quarter section

WELL ACTIVITY	WELL STATUS	TYPE OF PERMIT
☐ Class I	☐ Operating	☐ Individual
☐ Class II	☐ Modification/Conversion	☐ Area
☐ Brine Disposal	☐ Proposed	Number of Wells _____
☐ Enhanced Recovery		
☐ Hydrocarbon Storage		
☐ Class III		
☐ Other		

Lease Name Well Number

NAME(S) AND ADDRESS(ES) OF NEW OWNER(S)	NAME AND ADDRESS OF NEW OPERATOR

Attach to this application a written agreement between the existing and new permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them.

The new permittee must show evidence of financial responsibility by the submission of surety bond, or other adequate assurance, such as financial statements or other materials acceptable to the director.

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

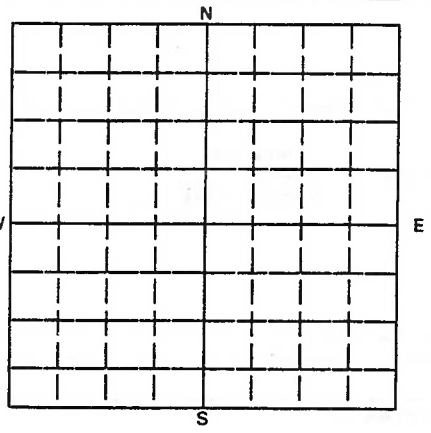
COMPLETION REPORT FOR BRINE DISPOSAL, HYDROCARBON STORAGE, OR ENHANCED RECOVERY WELL

Form Approved
OMB No. 2040-0042
Approval expires 9-30-86

NAME AND ADDRESS OF EXISTING PERMITTEE

NAME AND ADDRESS OF SURFACE OWNER

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

¼ OF ¼ OF ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location _____ ft. from (N/S) _____ Line of quarter section

and _____ ft. from (E/W) _____ Line of quarter section

WELL ACTIVITY

- ☐ Brine Disposal
- ☐ Enhanced Recovery
- ☐ Hydrocarbon Storage

TYPE OF PERMIT

- ☐ Individual
- ☐ Area

Number of Wells _____

Estimated Fracture Pressure of Injection Zone

Anticipated Daily Injection Volume (Bbls)		Injection Interval	
Average	Maximum	Feet	to Feet

Anticipated Daily Injection Pressure (PSI)		Depth to Bottom of Lowermost Freshwater Formation (Feet)
Average	Maximum	

Type of Injection Fluid *(Check the appropriate block(s))*

- ☐ Salt Water
- ☐ Brackish Water
- ☐ Fresh Water
- ☐ Liquid Hydrocarbon
- ☐ Other

Lease Name	Well Number

Name of Injection Zone

Date Drilling Began	Date Well Completed

Permeability of Injection Zone

Date Drilling Completed

Porosity of Injection Zone

CASING AND TUBING			CEMENT		HOLE	
OD Size	Wt/Ft — Grade — New or Used	Depth	Sacks	Class	Depth	Bit Diameter

INJECTION ZONE STIMULATION		WIRE LINE LOGS, LIST EACH TYPE	
Interval Treated	Materials and Amount Used	Log Types	Logged Intervals

Complete Attachments A — E listed on the reverse.

CERTIFICATION

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NAME AND OFFICIAL TITLE *(Please type or print)*		DATE SIGNED

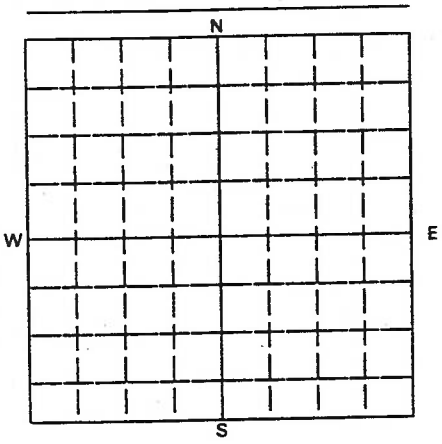
Form . ved. OMB No. 2000-0042. Approval expires 9-30-86

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

NAME AND ADDRESS OF EXISTING PERMITTEE	NAME AND ADDRESS OF SURFACE OWNER

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

¼ OF ¼ OF ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location _____ ft. from (N/S) _____ Line of quarter section

and _____ ft. from (E/W) _____ Line of quarter section

WELL ACTIVITY

- ☐ Brine Disposal
- ☐ Enhanced Recovery
- ☐ Hydrocarbon Storage

TYPE OF PERMIT

- ☐ Individual
- ☐ Area

Number of Wells _____

Lease Name Well Number

	INJECTION PRESSURE		TOTAL VOLUME INJECTED		TUBING — CASING ANNULUS PRESSURE (OPTIONAL MONITORING)	
MONTH YEAR	AVERAGE PSIG	MAXIMUM PSIG	BBL	MCF	MINIMUM PSIG	MAXIMUM PSIG

CERTIFICATION

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NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED

Form Appr OMB No. 2000-0042. Approval expires 9-30-86

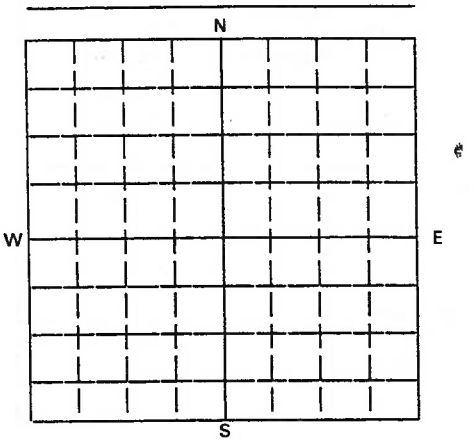
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

WELL REWORK RECORD

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

¼ OF ¼ OF ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location _____ ft. from (N/S) _____ Line of quarter section

and _____ ft. from (E/W) _____ Line of quarter section

WELL ACTIVITY		TYPE OF PERMIT
☐ Brine Disposal ☐ Enhanced Recovery ☐ Hydrocarbon Storage	Total Depth Before Rework	☐ Individual ☐ Area Number of Wells _____
	Total Depth After Rework	
Lease Name	Date Rework Commenced	Well Number
	Date Rework Completed	

WELL CASING RECORD — BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

WELL CASING RECORD — AFTER REWORK *(Indicate Additions and Changes Only)*

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

DESCRIBE REWORK OPERATIONS IN DETAIL USE ADDITIONAL SHEETS IF NECESSARY	WIRE LINE LOGS, LIST EACH TYPE	
	Log Types	Logged Intervals

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED

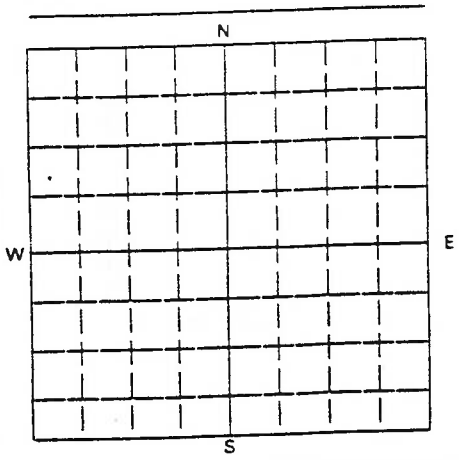
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY	NAME AND ADDRESS OF OWNER/OPERATOR

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

¼ OF ¼ OF ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location ____ ft. from (N/S) ____ Line of quarter section

and ____ ft. from (E/W) ____ Line of quarter section

TYPE OF AUTHORIZATION

- ☐ Individual Permit
- ☐ Area Permit
- ☐ Rule

Number of Wells ____

Lease Name

WELL ACTIVITY

- ☐ CLASS I
- ☐ CLASS II
  - ☐ Brine Disposal
  - ☐ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☐ CLASS III

Well Number

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☐ The Balance Method
- ☐ The Dump Bailer Method
- ☐ The Two-Plug Method
- ☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)							
Depth to Bottom of Tubing or Drill Pipe (ft.)							
Sacks of Cement To Be Used (each plug)							
Slurry Volume To Be Pumped (cu. ft.)							
Calculated Top of Plug (ft.)							
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)							
Type Cement or Other Material (Class III)							

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED *(If any)*

From	To	From	To

Estimated Cost to Plug Wells

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED

Mechanical Integrity Test
Casing or Annulus Pressure Mechanical Integrity Test

U.S. Environmental Protection Agency
Underground Injection Control Program, UIC Direct Implementation Program 8P-W-GW
999 18th Street, Suite 500 Denver, CO 80202-2466

EPA Witness: _____ Date: ____/____/____

Test conducted by: _____

Others present: _____

Well Name: _____ Type: ER SWD Status: AC TA UC

Field: _____

Location: _____ Sec: ____ T ____ N / S R ____ E / W County: _____ State: ____

Operator: _____

Last MIT: ____/____/____ Maximum Allowable Pressure: _____ PSIG

Is this a regularly scheduled test? [ ] Yes [ ] No

Initial test for permit? [ ] Yes [ ] No

Test after well rework? [ ] Yes [ ] No

Well injecting during test? [ ] Yes [ ] No If Yes, rate: _____ bpd

Pre-test casing/tubing annulus pressure: _____ psig

MIT DATA TABLE	Test #1	Test #2	Test #3
TUBING PRESSURE			
Initial Pressure	psig	psig	psig
End of test pressure	psig	psig	psig
CASING / TUBING ANNULUS PRESSURE			
0 minutes	psig	psig	psig
5 minutes	psig	psig	psig
10 minutes	psig	psig	psig
15 minutes	psig	psig	psig
20 minutes	psig	psig	psig
25 minutes	psig	psig	psig
30 minutes	psig	psig	psig
minutes	psig	psig	psig
minutes	psig	psig	psig
RESULT	[ ] Pass [ ]Fail	[ ] Pass [ ]Fail	[ ] Pass [ ]Fail

Does the annulus pressure build back up after the test ? [ ] Yes [ ] No

(over)

APPENDIX C

(Plugging and Abandonment Plan)

Steamboat Butte Field Tribal C-14

Plug #1 - Set a 100 sack cement plug across the Phosphoria (perforations) and Tensleep open-hole perforations from Total Depth to 6,500'. **Displace wellbore with 9.2 ppg bentonite or plugging gel from TOC to 3000'.**

Plug #2 - Set a 40 sack cement from 3000' to 2800'. **Displace wellbore with 9.2 ppg bentonite or plugging gel from TOC to 900'.**

Plug #3 - Perforate 7" casing from 850' - 800' and circulate 425 sacks of cement down the 7" **taking the returns up the annulus.** Leave casing and annulus full of cement.

Set P&A marker and restore location.

NOTE: **ALL PLUGS SHALL BE TAGGED TO VERIFY PLUG PLACEMENT.**

Tribal C-14

(P&A Wellbore Diagram)

General Well Information:
API Code: 49-013-06469
Reservoir: Phosphoria/Tensleep
Field: Steamboat Butte
Field Code: 3231 OP - 16838
Permit No.:
Spud: June 6, 1951
Finished Drilling: October 8, 1951
Completion: October 25, 1951
First Prod/Inj: November 1, 1951
Abandon:

Well Location:
330' FNL, 230' FEL, Sec 30, T4N, R1W

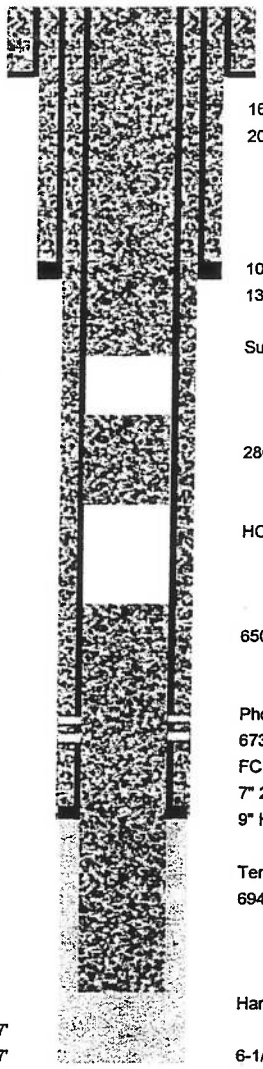
Elevations:
KB: 5769'
Grd: 5757'
KB-Grd: 12'

Last MIT: Needed Upon Conversion
Max Inj P:
Max Inj Q:

Formation Tops:

3110'	Frontier
3736'	Mowry
4268'	Muddy
	Thermop.
4490'	Dakota
4744'	Lakota
4778'	Morrison
4920'	Sundance
5250'	Gyp Springs
5400'	Nugget
6627'	Dinwoody
6721'	Phosphoria
6930'	Tensleep

PBTD 7007'
TD 7167'



16" 54# @ 81' w/ 60 sax (TOC - Surface)
20" hole

10-3/4" 40.5# J-55 @ 737' w/ 400 sx (TOC - Surface)
13-3/4" hole

Surface - 900' Cement Plug (425 sax)

2800' - 3000' Cement Plug (40 sax)

HOWCO DV Tool @ 3804' (Second Stage Cmt 500 sax)

6500' - 7007' Cement Plug (100 sax)

Phosphoria Perforations:
6730-45' (4 SPF 11/97)
FC @ 6862' (First Stage Cmt 700 sax)
7" 23# N-80 @ 6946' w/ 1200 sx (TOC - 2444' Calculated)
9" Hole

Tensleep Perforations:
6946-7007' (Open Hole 10/51)

Hard Fill Encountered at 7007'

6-1/4" Open Hole From 6946' to 7137'

Well History:

10/51 - Spudded and Drilled to 7167' KB. Completed the Tensleep Formation open hole from 6946' - 7036', POP with 2-1/4" tubing pump. IP'd at 546 BOPD.
02/55 - Set Open Hole Baker Model "C" CIBP w/ Baker bailer and 3/4 sack cement at 6998' KB to shut off water.
07/66 - Well Testing at 76 BOPD adn 614 BWPD.
02/73 - ESP burnt, could not pull due to tight spot in casing. Cut off tubing @ 6581' and recovered. Swaged out collapsed casing from 6670-75'. Fished ESP equipment and POP.
03/97 - Reactivated Tensleep, SI since 1991. Ran ESP equipment and POP. Tested at 108 BO & 4538 BW.
11/97 - Recompleted to the Phosphoria. Set RBP at 6858', perforated the Phosphoria at 6730-45'. Broke down Phos perfs with a acid/nitrogen surge job, well swabbed dry. Performed gelled acid frac and well flowed back for three days. POP w/ the Tensleep isolated below the RBP. IP'd at 241 BO and 1015 BW.
11/98 - Retrieved RBP, sand frac'd the Upper Tensleep open hole from 6946-67'. Frac'd with 23,500# of 20-40 Ottawa sand and ProTechnics tagged frac for tracing. Frac height grew from 6946-6975', contained in the Upper Tensleep.
12/98 - Pumped 1470 bbls of cross-linked polymer (5000 ppm) into Tensleep open hole (OH packer set at 6975'). SD job early because well pressured up. IP'd at 350 BO and 3800 BW from Phos and Upper/Lower Tensleep.
02/99 - ESP failure. Tagged sand at 7007', could not clean out with tubing pump. POP.

Well Name & Number:	Tribal C-14	Lease:	Steamboat Butte		
County or Parish:	Fremont	State/Prov.	Wyoming	Country:	USA
Current Status:	Active Phos/Ten Producer	Field:	Steamboat Butte		
Prepared By:	G. Hilton	Last Revision Date:	02/20/2002		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466
Phone 800-227-8917
http://www.epa.gov/region08

APR 7 2003

Ref: 8P-W-GW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Randy Meabon
Regulatory Coordinator
Marathon Oil Company
1501 Stampede Avenue
Cody, Wyoming 82414-4721

RE: UNDERGROUND INJECTION CONTROL (UIC)
Final Permit Tribal C-14
EPA Permit No. WY20940-04674
Steamboat Butte Field
Fremont County, Wyoming

Dear Mr. Meabon:

Enclosed is the Final Underground Injection Control (UIC) Permit for the enhanced recovery well Tribal C-14. A Final Statement of Basis, which discusses development of the Permit, is also enclosed.

The public comment period for the proposed Permit action ended February 22, 2003. There were no comments from the public, surface landowner, or from your office; therefore, the Final Permit action is to become effective upon the date of issuance.

Under the terms of the Permit, you are now authorized to construct or convert the Tribal C-14 well for injection operations. Injection operations may not commence until all "Prior to Commencing Injection" conditions found in Part II Section C.1. of the Permit are fulfilled, and written Authorization To Inject is received from the Director. Please note that you are required to complete the following:

1). **determine the injection zone pore pressure (static bottom-hole pressure);**

2). conduct a **successful Part I (Internal) mechanical integrity pressure test (MIT)** that has been witnessed and approved according to the current UIC Guidance. A two week notice of the scheduled test is required so that we may arrange to witness;

3) demonstrate **Part II (External Mechanical Integrity**, no significant fluid movement into a USDW through vertical channels adjacent to the wellbore, within 180 days following permittee's receipt of the Director's Limited Authority to commence Injection. The demonstration shall be made by a Noise Log, or Temperature Log, or the results of a Radioactive Tracer Survey (RTS) may be acceptable under certain circumstances; and

4) all conversion is complete and the permittee has submitted a completed **Well Rework Record, (EPA Form 7520-12) with newly completed schematic.**

Please note that Mechanical Integrity (MI) Parts I and Parts II must be repeated at least once every five (5) years during the life of the well.

If you have any questions on this action, please call Dan Jackson at 800.227.897.EX.6155. **Also, please direct all correspondence to the attention of Dan Jackson at Mail Code 8P-W-GW.**

Sincerely,

Carol L. Campbell for

Stephen S. Tuber
Acting Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

Enclosures: Final Statement of Basis
Final Permit

cc: Mr. Burton Hutchinson Sr., Chairman
Northern Arapaho Tribe
Arapaho Business Council

Mr. Vernon Hill, Chairman
Eastern Shoshone Tribe
Shoshone Business Council

Mr. Don Aragon, Executive Director for
Environmental Quality
Wind River Indian Reservation

Mrs. Janie Nelson
Environmental Program Supervisor
State of Wyoming

Mr. Ray Nation, Superintendent
Bureau of Indian Affairs
Wind River Agency

Mr. Stewart Cerovski
Bureau of Land Management
Lander Resource Area

Mr. Nathan Wiser
8ENF-T

STATEMENT OF BASIS

MARATHON OIL COMPANY

TRIBAL C-14

EPA PERMIT NO. WY20940-04674
CLASS II ENHANCED OIL RECOVERY

STEAMBOAT BUTTE FIELD
FREMONT COUNTY, WYOMING

CONTACT: D. Edwin Hogle
U. S. Environmental Protection Agency
UIC Section, 8P-W-GW
999 18th Street, Suite 300
Denver, Colorado 80202-2466
Telephone: 800.227.8917 Ex.6137

DESCRIPTION OF FACILITY AND BACKGROUND INFORMATION:

On April 19, 2002, Marathon Oil Company (Marathon), Cody, Wyoming, made application for a proposed Class II Injection well in the Steamboat Butte Field, Fremont County, Wyoming. This Permit application is for the conversion of a **commingled Phosphoria/Tensleep Formation oil producer to a commingled Phosphoria/Tensleep Formation injection well** to support an ongoing enhanced oil recovery project by Marathon in the Steamboat Butte Field.

The area covered by the application is in a portion of the Steamboat Butte Field and within the exterior boundaries of the Wind River Indian Reservation for the following proposed enhanced oil recovery well:

Tribal C-14
NE/4 SE/4 Section 30, Township 4 North, Range 1 West
Fremont County, Wyoming

Underground Sources of Drinking Water (USDWs): are defined by the UIC regulations as aquifers or portions thereof which contain less than 10,000 mg/l total dissolved solids (TDS) and

which are being or could be used as a source of drinking water. The only known USDWs in the general area have been identified by the State of Wyoming Oil and Gas Conservation Commission (May 8, 1991) as the:

Formation	Depth (ft)	Water Quality (mg/l)
Quaternary sands	not present	2430
Wind River sands	not present	700 - 2800
Cody shale (thin isolated sands)	0 - 2852'	1750 - 2430
Frontier sand	3102'- 3766'	4383 - 7630
Muddy sand	4329'- 4375'	7292 - 7553
Dakota sand	4553'- 4625'	6080

Other than near-surface gravels, any USDWs in the general area of the well, including the Phosphoria and Tensleep Formations, are all behind the long string casing which is cemented up to a calculated depth of 2,444'.

All possible USDW intervals encountered in the **Tribal C-14** well are currently producing hydrocarbons in this area. The Frontier, Muddy and the Dakota sands are all producing in the Steamboat Butte Field and the discontinuous sand lenses in the Cody shale have hydrocarbon shows and are productive in the nearby Pilot Butte Field.

The Tensleep Formation, with a water quality of 5,861 mg/l TDS, and the Phosphoria Formation with a TDS of 7,347 mg/l were granted field wide exempted aquifer status under CFR 40 § 147.2554, October 25, 1988. The limits of the exempted aquifers include those portions of the aquifers defined on the surface by an outer boundary of those quarter-quarter sections dissected by a line drawn parallel to, but one-quarter mile outside, the Steamboat Butte Field boundary.

Confining Zones: The above intervals are isolated by several hundred feet of competent shales (confining zones). The Cody shale with a gross interval of 2852 feet contains only thin isolated sands. The Frontier USDW is confined by the overlying Cody, and 491 feet of underlying Mowry and upper Thermopolis shales. The Muddy sand is confined by overlying Mowry and upper Thermopolis shales. The 150' Gypsum Springs Formation serves as the confining zone for the Nugget Formation and consists of impermeable interlayered anhydrite, shaley limestone, dense dolomite, siltstone, and red shale near the base of the Formation. In the Tribal C-14 well, the overlying Phosphoria Formation serves as the confining zone for the Tensleep. The confining zone above the Phosphoria injection formation is a

94-foot section of Dinwoody Formation; this section contains greenish-gray shales, anhydritic, dolomitic shales and gray dense dolomitic limestones.

From past records there has been no evidence of out-of-zone fluid migration during any of the stimulations performed on the Steamboat Butte Phosphoria completions, within the field, indicating that the confining zones indicated above are serving as effective zones.

The above information is derived from E-Log information of the Tribal C-14 well and drilling samples.

Marathon has submitted all required information and data necessary for Permit issuance in accordance with 40 CFR Parts 144, 146 and 147, and a Final Permit has been prepared. The Permit will be issued for the operating life of the well, unless terminated for reasonable cause (40 CFR 144.39, 144.40 and 144.41). However, the Permit will be reviewed every five years.

This Statement of Basis (SOB) gives the derivation of the site-specific Permit conditions and reasons for them. The referenced sections and conditions correspond to the sections and conditions in Permit WY20940-04674. The general Permit conditions, for which the content is mandatory and not subject to site-specific differences (based on 40 CFR Parts 144, 146 and 147), are not included in the discussion.

PART II, Section A WELL CONSTRUCTION REQUIREMENTS

Casing and Cementing (Condition 1)

Casing and cementing details were submitted with the Permit application. The Tribal C-14 well was drilled and completed June 1951 as a Tensleep open-hole producer by British American Oil Production Company. The well was deemed uneconomic to produce in 1991 and was shut-in. The Upper Tensleep was reactivated, and the well was re-completed to the Phosphoria in 1997. Phosphoria/Tensleep commingled production has fallen off. Present construction is as follows:

(1) **Surface Casing:** (10-34") was set in a 13-3/4 inch hole at a depth of 737 feet and cemented in place with 420 sacks of cement to surface.

(2) **Long string casing:** a 9 inch diameter hole was drilled to a depth of 7,167 feet, and 7" production casing was set to a depth of 6,946 feet and two-stage cemented with 1200 sacks of cement to a **Calculated Top of Cement**

(TOC) at 2444'. Plugged back total depth (PBTD)is 7040'.

Because a Cement Bond Log (CBL) is not available for this well, it was not shown that an adequate interval of 80% or greater bond index exists through the confining zone overlying the Phosphoria Formation confining zone. Therefore, the operator is required to demonstrate Part II (External) Mechanical Integrity (Part II MI) within a 180-day "Limited Authorized Period". **A water injection profile log, including RATS, will be run on the well as soon as stabilized injection is established or within the 180-days.**

UPON REENTRY OF THIS COMMINGLED PHOSPHORIA/TENSLEEP PRODUCTION WELL, TO A COMMINGLED PHOSPHORIA/TENSLEEP ENHANCED OIL RECOVERY WELL WILL CONSIST OF:

1. Confirm Sundry approval prior to beginning this work. MIRU WOR. SD well and bleed off pressure.

2. The proposed procedure will consist of pulling the existing production equipment and setting a 7" injection packer (or equivalent) at an approximate depth of 6675', 3-1/2" injection tubing will be run to surface above the packer.

3. The wellbore annulus above the packer will be filled with a fluid composed of fresh water treated with corrosion inhibitors and oxygen scavengers.

4. Set packer and perform successful pressure test of backside to 1000# and hold for 30 minutes. Notify EPA prior to test and notify SO&GC to witness test. POI upon EPA approval.

5. Wait for EPA approval and turn well on injection with a target injection rate not exceed the MAIP of 1794 psig. The completion procedure is as shown in **Appendix A**, which graphically displays the recompletion details.

6. After well stabilizes, perform injection profile. This profile will insure no out of zone (Phosphoria/Tensleep perforations) injection is occuring, should the test identify movement of injected fluids above the Phosphoria perforations, injection shall be discontinued immediately until remedial work, approved by the EPA, is performed. The injection profile may also be a tool for monitoring the waterflood injection zone efficiency for secondary recovery. **From past**

records there has been no evidence of out-of-zone fluid migration during any of the stimulations performed on the Steamboat Butte Phosphoria completions, within the field, indicating that the confining zones are serving a effective zones.

Tubing and Packer Specifications (Condition 2)

The 3-1/2 inch injection tubing information submitted by the applicant is designed to prevent injected fluids from coming in contact with the outermost casing string protecting USDWs. The presence of an annular space between the tubing and the casing allows the casing integrity to be periodically tested, as well as to monitor for leaks in the tubing. The tubing information, as submitted by the permittee, is graphically incorporated into the Permit as **Appendix A.** The 7" injection packer setting shall be at a depth of no more than 100 feet above the top perforations (6730') of the Phosphoria Formation.

Monitoring Devices (Condition 3)

The permittee shall install: a ½ inch fitting with a cut-off valve at the wellhead on the tubing; a similar fitting and cut-off valve for the casing/tubing annulus; a flow meter that will be used to measure cumulative volumes of injected fluid; and pressure gauges attached to the tubing and tubing/casing annulus to allow for monitoring of the injection and annulus fluid pressures. The permittee shall also install a sampling tap on the line to the injection well.

Proposed Changes and Workovers. (Condition 4)

The operator shall give advance notice to the Director, as soon as possible, of any planned physical additions to the permitted facility. Major alterations or workovers of the permitted well shall meet all conditions as set forth in the Permit. A major alteration/workover shall be considered any work performed which affects casing, packer(s), or tubing. In additional, the operator shall provide all records of well workovers, logging, or other test data to EPA within Sixty (60) days of completion of the activity. **Appendix B contains samples of the appropriate reporting forms.**

Demonstration of mechanical integrity shall be performed within thirty (30) days of completion of workovers/alterations and prior to resuming injection activities, in accordance with Part II. Section C. 2.

Formation Testing (Condition 5)

The permittee will determine the injection zone fluid pore pressure (**static bottom-hole pressure**) and a **water injection profile log** will be run on the well within 180-days or as soon as stabilized injection is established. This profile will be used to insure no out of zone injection is occurring.

Postponement of Conversion (Condition 6)

If the well is not converted to injection status within one (1) year from the effective date of this Permit, the authorization to convert and operate will automatically expire, unless the permittee requests and is granted an extension. The request shall be made to the Director in writing, and shall state the reasons for the delay in conversion/construction, and confirm the protection of all USDWs. The extension under this section may not exceed one (1) year. Once authorization to convert and inject expires under this part, the full permitting process, including opportunity for public comment, must be repeated before authorization to construct/convert and operate will be reissued.

PART II, Section B CORRECTIVE ACTION

Within a 1/4-mile area of review (AOR) surrounding the **Tribal C-14 well**, there are nine (9) wells: four (4) Tensleep producers (cemented a minimum 4110' above the top perforations), four (4) Phosphoria/Tensleep commingled producers (cemented to 1950') and one (1) Phosphoria/Tensleep commingled injector (UIC Permitted WY2865-02138). All of these wells are constructed in a manner to preclude uphole contamination from oil production. If any leaks are detected, the Tribal C-14 well will be shut-in and corrective measures will be taken to restore integrity to the wellbore. The permittee shall provide a written report of the corrections taken and receive written authorization from the Director prior to resuming injection activities. Therefore, the permittee is not required to perform any corrective action prior to the issuance of this Permit.

PART II, Section C WELL OPERATION

Prior to Commencing Injection (Condition 1)

Injection operations shall not commence until the permittee has complied with the following:

a. Conversion is complete and permittee has submitted a **Well Rework Record (EPA Form 7520-12), Appendix B contains samples of the appropriate reporting forms**

which may be reproduced. A current wellbore diagram will be included; and

b. determined the injection zone fluid pore pressure (static bottom-hole pressure); and

c. a successfully passed Part I (internal) mechanical integrity pressure test (MIT) shall be performed with pressure chart, according to the current UIC Guidance for Conducting a Pressure Test to Determine if a Well Has Leaks in the Tubing, Casing or Packer; and

d. the Permit shall require the operator to demonstrate Part II (External MI), no significant fluid movement into a USDW through vertical channels adjacent to the wellbore, within 180-days following permittee's receipt of the Director's LIMITED AUTHORITY TO COMMENCE INJECTION. The demonstration shall be made by a Noise Log, or temperature log, or the results of a radioactive tracer survey (RTS) may be acceptable under certain circumstances.

Mechanical Integrity (Subsequent to Initial Demonstration) (Condition 2)

Mechanical Integrity (MI) Parts I and Parts II must be repeated at least once every five (5) years during the life of the well. A demonstration of Part I (Internal) mechanical integrity is required to be performed within thirty (30) days of completion of any workover and/or alterations, and prior to resuming injection activities in accordance with Part II, Section C. 2.

Injection Interval (Condition 3)

Injection will be limited to the Phosphoria and Tensleep formations within the subsurface interval from 6721 feet to 7167 feet total depth (TD).

Injection Pressure Limitation (Condition 4)

Injection pressure (Pm), measured at the surface, shall not exceed an amount that the Director determines is appropriate to ensure that injection does not initiate new fractures or propagate existing fractures in the confining zone overlying the injection zones. Enclosed with the Permit application is a copy of EPA's "Acceptable Sand-Face Fracture Gradients" for the Steamboat Butte Field, date August 12, 1997. The data provided

by Chevron U.S.A. Production Company, (previous owner of the field) was from Step-Rate tests and ISIP information for three producing zones in the Steamboat Butte Field. Given these conditions, the maximum surface injection pressure (Pmax) for the Phosphoria/Tensleep, for the **Tribal C-14** injection perforations, shall be calculated as shown below:

PHOSPHORIA:

Pmax = [FG - (S_g) 0.433] h

Where:

Pmax = Fracture Pressure at the Surface (psig)
FG = fracture gradient 0.77 psig/ft
h = depth to top of perforations = 6730 feet
S_g = specific gravity of injected fluid = 1.00

Pmax = [0.77 - (1.00) 0.433] 6730

Pmax = 2,265 psig

TENSLEEP:

Pmax = [FG - (S_g) 0.433] h

Where:

Pmax = Fracture Pressure at the Surface (psig)
FG = fracture gradient 0.70 psig/ft
h = depth to top of perforations = 6930 feet
S_g = specific gravity of injected fluid = 1.00

Pmax = [0.70 - (1.00) 0.433] 6930

Pmax = 1,794 psig

The permittee has requested a maximum surface injection of 1794 pounds per square inch gauge (psig), with an average of 1400 psig; however, if a higher pressure is requested it must be accompanied by a step-rate test (SRT) of the injection zone(s).

A **maximum surface injection pressure of 1794 psig** is approved for this well until such time as the permittee demonstrates otherwise.

Injection Volume Limitation (Condition 5)

There will be no limitation on the number of barrels of water per day (BWPD) shall be injected into the Tribal C-14 well, provided further that in no case shall injection pressure exceed that limit shown in Part II. Section C. 4. (b) of this Permit.

PART II, Section D MONITORING, RECORDKEEPING AND REPORTING OF RESULTS

Injection Well Monitoring Program (Condition 1)

Injection fluids are limited to those identified in 40 CFR § 144.6(b)(2) as fluids used for enhanced recovery of oil or natural gas. The permittee is required to monitor water quality of the injected fluids on an annual basis for:

1. total dissolved solids; and,
2. pH; and,
3. specific conductivity; and,
4. specific gravity as required by the permit.

Any time there is a change in the source of injection fluid, a new water quality analysis is required. A water analysis of the injected fluids was submitted with the Permit application, therefore, the permittee is not required to submit a water analysis report during the first year of authorization.

In addition, monthly observations of flow rate and cumulative volume will be made. At least one observation each for flow rate and cumulative volume will be recorded on a monthly basis. This record is required to be reported to EPA annually. Injection pressure and annulus pressure will be observed on a monthly basis, and recorded on a monthly basis. This record is required to be reported to EPA annually.

The permittee shall maintain copies (or originals) of all pertinent records at the office of:

Marathon Oil Company
Cody, Wyoming

PART II, Section E PLUGGING AND ABANDONMENT

Plugging and Abandonment Plan (Condition 2)

The plugging and abandonment plan submitted by the applicant is as follows:

Plug #1 - Set a 100 sack cement plug across the Phosphoria (perforations) and Tensleep open hole from total depth to 6500'. **Displace wellbore with packer fluid from TOC to 3000'.**

Plug #2 - **Set a 40 sack cement plug from 3000' to 2800'. Displace wellbore with 9.2 ppg bentonite or plugging gel from TOC to 900'.**

Plug #3 - Perforate 7" casing from 850'-800' and circulate 425 sacks of cement down the 7" taking returns up the annulus. Leave casing and annulus full of cement.

Set P&A marker and restore location.

Part II, Section F FINANCIAL RESPONSIBILITY

Demonstration of Financial Responsibility (Condition 1)

The permittee has chosen to demonstrate financial responsibility through a Financial Statement which has been evaluated and approved.